UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,450	08/31/2001	Motohiro Tanno	15689.77	2847

7590   04/06/2005

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EXAMINER
DAVIS, CYNTHIA L

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/944,450	TANNO ET AL.
	Examiner	Art Unit
	Cynthia L Davis	2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-104* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-104* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/9/04, 10/16/01.*

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the
United States before the invention thereof by the applicant for patent, or on an international application
by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this
title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior

to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2.   Claims 1-12, 24-28, 40-41, 53-64, 76-80, and 92-93 are rejected under 35

U.S.C. 102(e) as being anticipated by Aihara.

Regarding claim 1, a cell search method for a mobile station in a mobile

communication system, the method being characterized by comprising a first step of

despreading a received signal using a common spreading code common to all slots and

detecting slot boundaries on the basis of a first average correlation coefficient is

disclosed in Aihara, paragraphs 5-9. A second step of despreading the signal on the

basis of said slot boundaries detected at the first step, using different individual

spreading codes for said respective slots, and detecting frame boundaries and a

scramble code group on the basis of a second average correlation coefficient is disclosed in Aihara, paragraphs 10-14. A third step of descrambling a common pilot signal on the basis of said frame boundaries and scramble code group detected at the second step, and detecting a scramble code on the basis of a third average correlation coefficient is disclosed in Aihara, paragraphs 15-18. After said first, second, and third steps have been repeated, said first step is executed to detect slot boundaries using a plurality of said first average correlation coefficients is disclosed in Aihara, paragraph 19, the last 3 lines (if more scrambling codes are needed, the flow returns to step 1) and paragraph 9 (the highest correlation value is detected; this implies a plurality of correlation values are used to determine which is the highest).

Regarding claim 24, a cell search method for a mobile station in a mobile communication system, the method being characterized by comprising a first step of despreading a received signal using a common spreading code common to all slots and detecting slot boundaries on the basis of a first average correlation coefficient is disclosed in Aihara, paragraphs 5-9. A second step of despreading the signal on the basis of said slot boundaries detected at the first step, using different individual spreading codes for said respective slots, and detecting frame boundaries and a scramble code group on the basis of a second average correlation coefficient is disclosed in Aihara, paragraphs 10-14. A third step of descrambling a common pilot signal on the basis of said frame boundaries and scramble code group detected at the second step, and detecting a scramble code on the basis of a third average correlation coefficient is disclosed in Aihara, paragraphs 15-18. After said first, second, and third

steps have been repeated, frame boundaries and a scramble code group are detected using a plurality of said second average correlation coefficients with which said slot boundaries detected at said first step are equal is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected).

Regarding claim 40, a cell search method for a mobile station in a mobile communication system, the method being characterized by comprising a first step of despreading a received signal using a common spreading code common to all slots and detecting slot boundaries on the basis of a first average correlation coefficient is disclosed in Aihara, paragraphs 5-9. A second step of despreading the signal on the basis of said slot boundaries detected at the first step, using different individual spreading codes for said respective slots, and detecting frame boundaries and a scramble code group on the basis of a second average correlation coefficient is disclosed in Aihara, paragraphs 10-14. A third step of descrambling a common pilot signal on the basis of said frame boundaries and scramble code group detected at the second step, and detecting a scramble code on the basis of a third average correlation coefficient is disclosed in Aihara, paragraphs 15-18. After said first, second, and third steps have been repeated, a scramble code is detected using a plurality of said third average correlation coefficients with which said frame boundaries and scramble code group detected at said second step are equal is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected).

Regarding claim 53, a cell search apparatus for a mobile station in a mobile communication system, the apparatus being characterized by comprising a first detector for despreading a received signal using a common spreading code common to all slots and detecting slot boundaries on the basis of a first average correlation coefficient is disclosed in Aihara, paragraphs 5-9. A second detector for despreading the signal on the basis of said slot boundaries detected at the first detector using different individual spreading codes for said respective slots, and detecting frame boundaries and a scramble code group on the basis of a second average correlation coefficient is disclosed in Aihara, paragraphs 10-14. A third detector for descrambling a common pilot signal on the basis of said frame boundaries and scramble code group detected by the second detector and detecting a scramble code on the basis of a third average correlation coefficient is disclosed in Aihara, paragraphs 15-18. Said first detector comprises means for storing a plurality of said first average correlation value obtained during a plurality of searches, second, and means for detecting slot boundaries using a plurality of said first average correlation coefficients is disclosed in paragraph 7 (the delay profiles, i.e. correlation coefficients, of several slots are stored and averaged).

Regarding claim 76, a cell search apparatus for a mobile station in a mobile communication system the apparatus being characterized by comprising a first detector for despreading a received signal using a common spreading code common to all slots and detecting slot boundaries on the basis of a first average correlation coefficient is disclosed in Aihara, paragraphs 5-9. A second detector for despreading the signal on the basis of said slot boundaries detected by the first detector using different individual

spreading codes for said respective slots, and detecting frame boundaries and a

scramble code group on the basis of a second average correlation coefficient is

disclosed in Aihara, paragraphs 10-14. A third detector for descrambling a common

pilot signal on the basis of said frame boundaries and scramble code group detected by

the second detector and detecting a scramble code on the basis of a third average

correlation coefficient is disclosed in Aihara, paragraphs 15-18. Said second detector

comprises means for storing a plurality of said second average correlation values with

which said slot boundaries detected by said first detector are equal, and means for

detecting frame boundaries and a scramble code group using a plurality of said second

average correlation coefficients is disclosed in paragraph 12 (many correlation values

are calculated and stored).

Regarding claim 92, a cell search apparatus for a mobile station in a mobile

communication system, the apparatus being characterized by comprising a first detector

for despreading a received signal using a common spreading code common to all slots

and detecting slot boundaries on the basis of a first average correlation coefficients is

disclosed in Aihara, paragraphs 5-9. A second detector for despreading the signal on

the basis of said slot boundaries detected by the first detector using different individual

spreading codes for said respective slots and detecting frame boundaries and a

scramble code group on the basis or a second average correlation coefficients is

disclosed in Aihara, paragraphs 10-14. A third detector for descrambling a common

pilot signal on the basis of said frame boundaries and scramble code group detected by

the second detector, and detecting a scramble code on the basis of a third average

correlation coefficient is disclosed in Aihara, paragraphs 15-18. Said third detector comprises means for storing a plurality of said third average correlation coefficients with which said frame boundaries and scramble code group detected by said second detector are equal, and means for detecting a scramble code is detected using a plurality of said third average correlation coefficients is disclosed in paragraph 17.

Regarding claims 2 and 54, said second step comprises detecting frame boundaries and a scramble code group using a plurality of said second average correlation coefficients with which said slot boundaries detected at said first step are equal is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected).

Regarding claims 3, 5, 25, 55, 57, and 77, said third step comprises detecting a scramble code using a plurality of said third average correlation coefficients with which said frame boundaries and scramble code group detected at said second step are equal is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected).

Regarding claims 4, 6, 8, 10, 56, 58, 60, and 62, said first step comprises calculating a fourth average correlation coefficient by averaging a plurality of said first average correlation coefficients within a predetermined averaging section is disclosed in the last 2 lines of paragraph 7. Detecting said slot boundaries using a timing with which the fourth average correlation coefficient is largest is disclosed in paragraph 9.

Regarding claims 7, 11, 26, 27, 59, 63, 78, and 79, said second step comprises calculating a fifth average correlation coefficient by averaging, within a predetermined

averaging section, a plurality of said second average correlation coefficients with which

said slot boundaries detected; at said first step are equal and detecting said frame

boundaries and scramble code group using a timing with which the fifth average

correlation coefficient is largest is disclosed in paragraph 13, lines 6-10 and paragraph

14.

Regarding claims 9, 12, 28, 41, 61, 64, 80, and 93, said third step comprises

calculating a seventh average correlation coefficient by averaging, within a

predetermined averaging section, a plurality of said third average correlation coefficients

with which said frame boundaries and scramble code group detected at said second

step are equal and detecting said scramble codes using the seventh average correlation

coefficient is disclosed in paragraph 17.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 13, 14, 29, 30, 42, 43, 65, 66, 81, 82, 94, and 95 are rejected under 35

U.S.C. 103(a) as being unpatentable over Aihara in view of Yellin.

Regarding claims 13, 29, 42, 65, 81, and 94, a plurality of said first average

correlation values are weighted is missing from Aihara. However, Yellin discloses in

column 3, lines 58-60, use of a forgetting factor to give more weight to recent samples,

to enable tracking capabilities. It would have been obvious to one skilled in the art at

the time of the invention to weight the averaging in the system of Aihara. The motivation would be to enable tracking.

Regarding claims 14 and 66, said fourth average correlation value is calculated by adding a value obtained by multiplying a plurality of said first average correlation values by a forgetting factor is missing from Aihara. However, Yellin discloses in column 3, lines 58-60, use of a forgetting factor to give more weight to recent samples, to enable tracking capabilities. It would have been obvious to one skilled in the art at the time of the invention to use a forgetting factor in the system of Aihara. The motivation would be to enable tracking.

Regarding claims 30 and 82, if said slot boundaries detected at said first step are equal, a value is added which is obtained by multiplying a sixth average correlation coefficient obtained by averaging a plurality of said second average correlation coefficients within a predetermined averaging section, and if said slot boundaries detected at said first step are different, a result of the addition of said second average correlation coefficients is defined as said fifth average correlation coefficient is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected). A forgetting factor is missing from Aihara. However, Yellin discloses in column 3, lines 58-60, use of a forgetting factor to give more weight to recent samples, to enable tracking capabilities. It would have been obvious to one skilled in the art at the time of the invention to use a forgetting factor in the system of Aihara. The motivation would be to enable tracking.

Regarding claims 43 and 95, if said slot boundaries detected at said first step are equal, a value is added which is obtained by multiplying a eighth average correlation coefficient obtained by averaging a plurality of said second average correlation coefficients within a predetermined averaging section, and if said slot boundaries detected at said first step are different, a result of the addition of said third average correlation coefficients is defined as said seventh average correlation coefficient is disclosed in Aihara, paragraph 20 (the whole process is repeated with successive averaged coefficients until enough scramble codes are detected). A forgetting factor is missing from Aihara. However, Yellin discloses in column 3, lines 58-60, use of a forgetting factor to give more weight to recent samples, to enable tracking capabilities. It would have been obvious to one skilled in the art at the time of the invention to use a forgetting factor in the system of Aihara. The motivation would be to enable tracking.

4.   Claims 15, 18, 31, 34, 44, 47, 67, 70, 83, 86, 96, and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aihara in view of Alanara.

Regarding claims 15, 31, 44, 67, 83, and 96, said predetermined averaging section is adaptively changed according to a state of said mobile station is missing from Aihara. However, Alanara discloses in column 4, line 60-column 5, line 2 changing the cell search methodology in a cdma network based on the state of a mobile station. It would have been obvious to one skilled in the art at the time of the invention to change the averaging in the cell search method of Aihara based on the state of the mobile station. The motivation would be to have the cell searching adapt to the movement, or lack thereof, of the mobile station.

Regarding claims 18, 34, 47, 70, 86, and 99, the state of said mobile station is either a state immediately after power-on or a standby state or a communicating state is disclosed in Aihara, paragraph 2 (immediately after power-on, communicating, or standby are commonly the only three states that a mobile terminal in a cellular system can be in).

5.   Claims 16, 17, 32, 33, 45, 46, 68, 69, 84, 85, 94, 95, 20, 22, 36, 38, 49, 51, 72, 74, 88, 90, 101, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aihara in view of Yellin in further view of Alanara.

Regarding claim 16, 17, 32, 33, 45, 46, 68, 69, 84, 85, 94, and 95, said predetermined averaging section is adaptively changed according to a state of said mobile station is missing from Aihara. However, Alanara discloses in column 4, line 60-column 5, line 2 changing the cell search methodology in a cdma network based on the state of a mobile station. It would have been obvious to one skilled in the art at the time of the invention to change the averaging in the cell search method of Aihara based on the state of the mobile station. The motivation would be to have the cell searching adapt to the movement, or lack thereof, of the mobile station.

Regarding claims 20, 22, 36, 38, 49, 51, 72, 74, 88, 90, 101, and 103, the state of said mobile station is either a state immediately after power-on or a standby state or a communicating state is disclosed in Aihara, paragraph 2 (immediately after power-on, communicating, or standby are commonly the only three states that a mobile terminal in a cellular system can be in).

6.   Claims 19, 35, 48, 71, 87, and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aihara in view of Alanara in further view of Bouquier. The state of said mobile station is set according to a movement speed of said mobile station in advance is missing from Aihara. However, Bouquier discloses in paragraph 69 a three-step cell search system that takes into account movement speed of the mobile terminal. It would have been obvious to one skilled in the art at the time of the invention to set the state of the mobile terminal based on its movement speed. The motivation would be to have the measurements take into account the fact that mobile terminals do move in a cellular system (see Aihara, paragraph 2).

7.   Claims 21, 23, 37, 39, 50, 52, 73, 75, 89, 91, 102, and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aihara in view of Yellin and Alanara in further view of Bouquier. The state of said mobile station is set according to a movement speed of said mobile station in advance is missing from Aihara. However, Bouquier discloses in paragraph 69 a three-step cell search system that takes into account movement speed of the mobile terminal. It would have been obvious to one skilled in the art at the time of the invention to set the state of the mobile terminal based on its movement speed. The motivation would be to have the measurements take into account the fact that mobile terminals do move in a cellular system (see Aihara, paragraph 2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

CLD
3/27/2005   3/27/05

ALPUS H. HSU
PRIMARY EXAMINER